Physics - ICS Part 1 Physics Chapter 11 Short Questions Test

Q1. Does entropy of a system increase or decrease due to friction?

Ans 1: The entropy of a system increase due to the friction as work done against friction is changed into heat and heat added to the system increase its entropy.

Q2. What is the similarity and difference between internal energy and gravitational P.E?

Ans 1: Internal energy is similar to the gravitational P.E.So like the potential energy, it is the change in internal energy and not its absolute value, which is important.
Internal energy depends upon temperature of the system while gravitational P.E depends on position of the particle.

Q3. State Carnot's theorem.

Ans 1: It states that no heat engine can be more efficient than a carnot engine operating between the same two temperatures.

Q4. Is it possible to construct a heat engine that will not expel heat into the atmosphere?

Ans 1: No, it is not possible to construct a heat engine that will not expel heat into the atmosphere. It is against 2nd law of thermodynamics. A heat engine works only when some of the total heat absorbed from the source is expelled to a sink or atmosphere.

Q5. Define reversible and irreversible process.Give one example of each.

Ans 1: Reversible Process: A Process which can be retracted in exactly reverse order without producing any change in the surroundings is called reversible process.For example, melting of ice into water and freezing of water into ice.
Irreversible Processes: A process which cannot be retracted in the backward direction by reversing the controlling factors is called an irreversible process.
For example, work done against friction.

Q6. What happens to the temperature of the room, when an air conditioner in left running on a table in the middle of a room ?

Ans 1: No change will be observed because the heat is absorbed and expelled in the same room.Hence there will be no effect on the room's temperature.

Q7. Specific heat of a gas at constant pressure is greater than specific heat at constant volume why?

Ans 1: At constant volume, no work is done and the entire heat is utilized in raising the internal energy of the system.But under constant pressure, heat is not only required to raise the internal energy but also to do work against constant pressure.

Hence specific heat of a gas at constant pressure is greater than specific heat at constant volume.

Q8. What is Diesel Engine?

Ans 1: No spark plug is needed in diesel engine. Diesel is sprayed into cylinder at maximum compression. Because air is at high temperature after compression,fuel mixture ignites on contact with air is at high temperature after compression,fuel mixture ignites on contact with air in cylinder and pushes the piston outward.
Its efficiency is about 35% to 40%.

Q9. Define the term internal energy . Discuss in what form it is in an ideal gas.

Ans 1: The sum of all forms of molecular energies such as kinetic and potential energy of a substance is called its internal energy. Internal energy of an ideal gas system is generally the translational kinetic energy of gas molecules.

Q10. What would be the heat lost if internal energy decreased by 10j and 20j of work is done on the system simultaneously

Ans 1: